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Comment on: tobacco use and development of diabetes (examination of the underlying mechanisms)

Eurasian Clinical and Analytical Medicine Letters to the Editor

Tobacco use and diabetes

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To the Editor

The role of tobacco use in the development of diabetes can easily be missed possibly in the presence of other widely known risk factors. A regional study done in 2012 explores this relationship using data collected through a population-based survey.[1] The study is an example of how effectively the data collected through a cross-sectional survey can be used to address various population-level health issues. This article examines a positive relationship between tobacco use and development of diabetes.[1] This is an interesting relationship which has also been examined in another regional cross-sectional study; however, no significant results were found at different levels of smoking use.[2] The authors in both studies use data from the well-recognized World Health Organization based STEPwise survey; hence, represents characteristics of target population well. Population-based surveys if implemented with proper planning and appropriate sampling techniques and tools could provide quality information about the health risks and certain related outcomes effectively. A cohort study from the United States also examines the impact of active and passive smoking in the development of glucose intolerance.[3] To understand the background process behind this important relationship, between tobacco use and development of diabetes, it is critical to examine several health-related cofactors. These factors can be social, cultural, behavioral, and genetic related. While examining diabetes, some important population characteristics that can influence diabetes (in addition to tobacco use) could include education, diet, physical activity, body weight, family history of diabetes, parental consanguinity, and sedentary lifestyle.[2] Furthermore, the families share common habits or follow cultural norms in terms of diet, physical activity, tobacco use, occasionally work and other practices that could predispose them to certain diseases including diabetes. For example, among some cultures and ethnic groups the obesity is considered favorable and represent prosperity, in some smoking represent social status or class etc.At physiological and biochemical levels, the literature review in the area reveals that even though smoking can cause a decrease in the body weight, is associated with central obesity and oxidative stress both of which could lead to insulin resistance through several complex metabolic mechanisms.[4-6]

The direct effect of smoking on diabetes could be associated with inflammatory and oxidative stress along with damaging impact on the beta cells of pancreas.[5] Since, smoking can lead to the central obesity[4] increased abdominal and/or body fat leads to the higher levels of inflammatory substances such as cytokines, TNF-α, IL-6, etc. and all of these substances are associated with insulin resistance.[6] Simply, the excess abdominal fat behaves like an endocrine tissue and release all these detrimental chemicals that eventually could lead to diabetes.[5,6] It is also important to mention here that the smoking with existing diabetes can further complicate the course of the disease by its adverse effect on microvasculature.[5]

At the population level, the type of methodology authors used in above-mentioned papers, allow them to obtain quantitative data and fails to collect subjective aspects of the target population. This kind of research excludes the underlying complex phenomenon behind the numbers and interview responses thus provides objective aspects of the problem. Using mixed methods or pragmatic approach to examine the overt as well as cognitive aspects of social and behavioral factors and their influence on diabetes could provide a better understanding of the complex relationships described here. By doing so, the tobacco use and its role in diabetes can be examined appropriately in the light of other related factors and underlying phenomenons.

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